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**TITLE: HCMM - Soil Moisture in Relation to Geologic Structure  
and Lithology, Northern California**

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### Data Utilized

1. HCMM - About 170 separate images were received during the quarter. All of the images were reviewed for appropriateness to the project in terms of quality and seasonal representation. About 70 of the 170 images were selected for detailed examination and this work is underway.

Temperature Difference and Apparent Thermal Inertia images of the project area (May 30 & 31, 1978) were received during the last week of the quarter but have not been thoroughly evaluated as yet. Other TD and ATI images have been retrospectively ordered but not received.

2. Ground Truth and Auxiliary Data - Because of the type of investigation (visual interpretation) and the large area covered by the project (80 k.sq.mi.), it is impractical to list each source of data in this report. However, extensive use was made of Landsat images, published geologic maps and personal geologic knowledge of the area by the principal investigator in evaluating the HCMM data.

### Methods of Study

Since the project involves only visual interpretation of the images, no unusual procedures were adopted for the study. Positive transparencies of the HCMM imagery were optically projected onto a translucent screen (to a scale of about 1:500,000) and/or viewed through a binocular microscope over a standard photographic light-table. Geologic information on the images were interpreted in conjunction with low altitude airphotos, Landsat images and published geologic maps.

### Significant Results

During the quarter, work continued on interpretation of images within the Northern California Coast Ranges and western margin of the Sacramento Valley. Lithologic differentiation in the Coast Ranges on the basis of thermal data is questionable; however, many of the structural features are clearly discernable on Nite IR images and some of the structural linears may result in an extention of known faults within the region. The Late Mesozoic marine sedimentary rocks along the western margin of the Sacramento Valley are clearly defined on the Nite IR images and in a gross way individual layers of sandstone can be differentiated from shale. Further, late Pleistocene alluvial fans are clearly differentiated from second generation Holocene fans on the basis of tonal characteristics. Although the tonal characteristics change with the seasons, the differentiation of the two sets of fans is still possible.